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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/379,722	08/24/1999	CAMERON BOLITHO BROWNE	169.1418	1633

5514 7590 02/13/2004

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NEW YORK, NY 10112

EXAMINER
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HARRISON, CHANTE E

ART UNIT	PAPER NUMBER
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2672

23

DATE MAILED: 02/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/379,722

Applicant(s)

BROWNE ET AL.

Examiner

Chante Harrison

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-29, 32-60 and 63-91 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-29, 32-60 and 63-91 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

1. This action is responsive to communications: Amendment D, filed on 11/14/03.
2. Claims 1-29, 32-60, 63-91 are pending in the case. Claims 1, 32 and 63 are independent claims. Claims 1, 32 and 63 have been amended.

***Drawings***

1. The proposed drawing corrections and/or the proposed substitute sheets of drawings, filed on 11/14/03 have been approved by Examiner. Thus, the objection to the drawings for including and/or not including reference signs mentioned in the description is withdrawn.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, 7-12, 14-19, 21-26, 28-29, 33-36, 38-43, 45-50, 52-57, 59-60, 64-67, 69-74, 76-81, 83-88, and 90-91 are rejected under 35 U.S.C. 103(a) as being unpatentable over Henry Moreton, U.S. Patent 5,636,338, 6/1997.

As per independent claim 1, Moreton discloses providing the space curve (i.e. an open curve having torsion) (col. 5, ll. 40-51), the curve having two endpoints (col. 4, ll. 37-43; col. 12, ll. 14-15) and is adapted to have one of two directions, either a forward direction proceeding along the space curve from an initial endpoint to a terminating endpoint or a reverse direction proceeding along the space curve from the terminating endpoint to the initial endpoint (col. 8, ll. 25-45), selecting a desired direction (i.e. specifying a tangent constraint) (col. 5, ll. 60-67), generating a first vector (i.e. chord  $P_i$  to  $P_{i+1}$ ) (Fig. 12) having a direction the same as the selected desired direction (col. 11, ll. 55-60), generating a second vector (i.e. chord  $P_i$  to  $P_{i-1}$ ) (Fig. 12) having a corresponding direction representative of and derived from a corresponding characteristic of the space curve (col. 11, ll. 61-64; col. 8, ll. 60-65), determining based

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on a result of the comparison, a direction of the space curve (col. 8, ll. 60-65), wherein the determined direction of the space curve is one of two directions, either the forward or the reverse direction, that is closest in direction to the selected desired direction (col. 9, ll. 3-11; col. 11, ll. 23-25) and orientating the direction of the space curve to the determined direction (col. 9, ll. 1-3).

Moreton fails to specifically disclose comparing the first and second vectors. comparing the vectors, however it would have been obvious to one of skill in the art to incorporate comparing the first and second vectors with disclosure of Moreton because Moreton teaches the vectors sharing data structures that hold specified parameters, including tangents, for each vector to meet continuity for multiple parameters (col. 8, ll. 50-55, 60-65).

As per dependent claim 2, Moreton discloses determining space curve endpoints (col. 8, ll. 25-30, 50-55) and generating a second vector connecting the endpoints (col. 8, ll. 60-65).

As per dependent claim 3, Moreton discloses determining endpoints (col. 8, ll. 25-30, 50-55) and generating two-second vectors connecting the endpoints (col. 13, ll. 5-10), but fails to specifically disclose the each second vector having opposite directions. However it would have been obvious to one of ordinary skill in the art to incorporate each second vector having opposite directions with the disclosure of

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Moreton because Moreton teaches initializing the tangent directions of endpoints of each curve in a network (col. 12, ll. 3-6).

As per dependent claim 4, Moreton discloses determining a first angle between one of the second vectors and the first vector (col. 8, ll. 53-58), determining a second angle between the other one of the second vectors and the first vector (col. 8, ll. 53-58), comparing the first angle with the second angle (col. 1, ll. 60-65), but fails to specifically disclose wherein if the first angle is less than the second angle then the determined direction of the space curve is in a first direction, and if the first angle is greater than the second angle then the determined direction of the space curve is in a second direction, opposite the first direction. It would have been obvious to incorporate determining the curve direction based on the magnitude of the angles associated with the vectors with the disclosure of Moreton because Moreton teaches varying the curve direction based on the angular difference between tangents of adjacent vector curve segments (col. 1, ll. 60-65) with the direction of the curve being varied (i.e. forward or reverse) by the magnitude of the angle (col. 1, ll. 60-65; col. 8, ll. 35-45).

As per dependent claim 5, Moreton discloses determining a first angle (col. 8, ll. 53-58), comparing the first angle with a first threshold value (col. 4, ll. 64-67), but fails to specifically disclose wherein if the first angle is less than the first threshold values then the determined direction of the space curve is in a first direction, and if the first angle is

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greater the first threshold value then the determined direction of the space curve is in a second direction, opposite the first direction. It would have been obvious to incorporate determining the curve direction based on the comparison of the angle with a threshold with the disclosure of Moreton because Moreton teaches varying the curve direction as a function of the curvature, which is based on angle separation and a limit determined by the angle separation (col. 4, ll. 60-65) with the direction of the curve being varied (i.e. forward or reverse) by the magnitude of the angle (col. 1, ll. 60-65; col. 8, ll. 35-45).

As per dependent claims 7, 8, 21, 22 Moreton discloses generating a vector orthogonal to the first vector (Fig. 3).

As per dependent claims 9, 23, Moreton discloses the orthogonal vector is generated in a predetermined manner (col. 4, ll. 58-64; Fig. 3).

As per dependent claims 10, 24, Moreton discloses the orthogonal vector is generated in accordance with a selected direction (col. 4, ll. 55-65; col. 12, ll. 5-6), but fails to specifically disclose a user selection. It would have been obvious to one of skill in the art to incorporate a user selected direction with the disclosure of Moreton because Moreton teaches providing specifications to computer aided design tools (col. 4, ll. 29-21).

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As per dependent claim 11, similar rationale as applied to claim 4 applies herein as Moreton discloses angles (i.e. alpha, beta, gamma) specifying the parameterization at the endpoints (col. 11, ll. 25-30), with the direction of the curve being varied (i.e. forward or reverse) by the magnitude of the angle (col. 1, ll. 60-65; col. 8, ll. 35-45).

As per dependent claim 12, similar rationale as applied to claim 5 applies herein.

As per dependent claim 14, Moreton discloses determining endpoints (col. 8, ll. 25-30, 50-55) and generating second vector tangents for each endpoint (col. 12, ll. 3-6).

As per dependent claim 15, similar rationale as applied to claim 4 applies herein.

As per dependent claims 16 and 17, similar rationale as applied in the rejection of claims 2 and 3 apply herein as Moreton discloses generating one or multiple vectors in a network of curves (col. 12, ll. 1-20; col. 13, ll. 5-10).

As per dependent claim 18, similar rationale as applied to claim 4 applies herein as Moreton discloses angles (i.e. alpha, beta, gamma) specifying the parameterization at the endpoints (col. 11, ll. 25-30).

As per dependent claim 19, similar rationale as applied to claim 5 applies herein.



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As per dependent claim 25, similar rationale as applied to claim 11 applies herein.

As per dependent claim 26, similar rationale as applied to claim 12 applies herein.

As per dependent claim 28, Moreton discloses providing further space curves (col. 13, ll. 5-10), and performing the step of generating a second vector (col. 8, ll. 60-65), comparing first and second vectors (col. 8, ll. 50-55, 60-65) and orientating the direction of each curve (col. 9, ll. 1-3).

As per dependent claim 29, Moreton discloses a plurality of techniques for generating the second vectors (i.e. specifying a level of continuity) (col. 1, ll. 27-30; col. 8, ll. 50-53, 60-65). Moreton fails to disclose selecting one of the techniques in response to user input. It would have been obvious to one of skill in the art to incorporate selection of a technique in response to user input with the disclosure of Moreton because Moreton teaches providing specifications to computer aided design tools (col. 4, ll. 29-21).

As per independent claim 32, Moreton discloses an apparatus (Fig. 6) for performing the method of claim 1. Therefore the rejection as applied to claim 1 is included herein.

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As per independent claim 63, Moreton discloses a program (col. 4, ll. 25-30) for performing the method of claim 1. Therefore the rejection as applied to claim 1 is included herein.

As per dependent claims 33-36, 38-43, 45-50, 52-57, 59-60, 64-67, 69-74, 76-81, 83-88, and 90-91, the rationale as applied to respectively corresponding claims 1-5, 7-12, 14-19, 21-26 and 28-29 apply herein.

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Claims 6, 13, 20, 27, 37, 44, 51, 58, 68, 75, 82, and 89 are rejected under 35 U.S.C. 103(a) as being unpatentable over Henry Moreton as applied to claims 1, 32 and 63 above and further in view of Rice et al., U.S. Patent 6,268,871.

As per dependent claims 6, 13, 20, 27, 37, 44, 51, 58, 68, 75, 82, and 89, Moreton fails to disclose the first threshold value is 90 degrees, which Rice discloses (Fig. 15; col. 11, ll. 55-65). It would have been obvious to one of skill in the art to incorporate Rice's disclosure of a 90 degree threshold with the teachings of Moreton because Moreton discloses designating constraint parameters that are compared to determine curve direction based on an angular threshold (col. 8, ll. 50-65; col. 1, ll. 60-65).

***Response to Arguments***

1. Applicant's arguments, see page 34, filed 11/14/03, with respect to the rejection(s) of claim(s) 1-3, 14, 28, 29, 32-34, 45, 59, 60, 63-65, 76, 90-91 under Rice, U.S. Patent 6,268,871 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Henry Moreton, U.S. Patent 5,636,338 in view of both Rice, U.S. Patent 6,268,871.

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***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chante Harrison whose telephone number is 703-305-3937. The examiner can normally be reached on Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Razavi can be reached on 703-305-4713. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4700.

Chante Harrison  
Examiner  
Art Unit 2672

February 6, 2004



MICHAEL RAZAVI  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600

U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICE

## EXAMINER'S CASE ACTION WORKSHEET

Application No.  
09/379,722



Legal Instrument Examiner

CHECK TYPE OF ACTION

DATE OF COUNT

<input checked="" type="checkbox"/> Non-Final Rejection	<input type="checkbox"/> Restriction/Election Only	<input type="checkbox"/> Final Rejection
<input type="checkbox"/> Ex Parte Quayle	<input type="checkbox"/> Allowance	<input type="checkbox"/> Advisory Action
<input type="checkbox"/> Examiner's Answer	<input type="checkbox"/> Reply Brief Noted	<input type="checkbox"/> Non-Entry of Reply Brief
<input type="checkbox"/> Defective Notice of Appeal	<input type="checkbox"/> Interference Disposal SPE _____ (Approval for Disposal)	<input type="checkbox"/> Suspension (Examiner-Initiated) SPE _____ (initial)
<input type="checkbox"/> Defective Appeal Brief	<input type="checkbox"/> SIR Disposal (use only after FAOM)	<input type="checkbox"/> Supplemental Examiner's Amendment
<input type="checkbox"/> Miscellaneous Office Letter (With Shortened Statutory Period Set)	<input type="checkbox"/> Notice of Non-Responsive Amendment (With One Month Time Period set)	<input type="checkbox"/> Miscellaneous Office Letter (No Response Period Set)
<input type="checkbox"/> Abandonment after BPAI Decision	<input type="checkbox"/> Supplemental Action (excluding Examiner's Answer)	<input type="checkbox"/> Response to Rule 312 Amendment
<input type="checkbox"/> Letter Restarting Period for Response (e.g., Missing References)	<input type="checkbox"/> Interview Summary	<input type="checkbox"/> Authorization to Change Previous Office Action SPE: _____ (Initial)
<input type="checkbox"/> Abandonment	<input type="checkbox"/> Express Abandonment Date: _____	<input type="checkbox"/> Other Specify: _____

Examiner's Name: Chante Harrison

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